Summary: P154, Multiple Choice #1-10, 12 ; P155, True False #13-25; P155, Short Answer, #27-35; P156, Inquiry #38,41; P156, Communication, #42,44,49

P154
Multiple Choice
1) c; 2) c; 3) e; 4) d; 5) a; 6) a; 7) c; 8) b; 9) a; 10) a; 12) d

P155
True/False
13) F This scale is precise but not accurate
14) T
15) F, matter is anything that has mass, or is made of atoms.
16) F, liquid, solid and gas (plasma exists and very high temperatures only)
17) F When iron rusts, it becomes a compound, this is a chemical change.
18) F, Acid rain is a solution (water plus an ionic compound containing hydrogen ion)
19) F, A quantitative physical change occurs
20) F, energy must be added to the water
21) F, homogeneous mixture (most gold jewelry is an alloy of gold, pure gold is too soft)
22) F, water is an example of a compound
23) T
24) T
25) F, the number of each type of atom in the products is equal to the number of each type of atom in the reactants

P155
Short Answer
27) One, only nitrogen
28)
a) K > Na > H, all in same group, higher in group is smaller
b) Mg > Si > S, all in same period, further right is smaller
c) K > Cl > Ar, K one period lower than Cl and Ar, therefore larger (one more energy level), Cl and Ar same period, Ar is further right.

29)
a) B < N < F, all same period, further right has higher IE
b) Br < Cl < F, all same group, higher in group has higher IE
c) Cs < K < Na, all same group, higher in group has higher IE

30)
a) Ca < Mg < Be, all in same group, higher has higher EA
b) Kr < Se < Br, all in same period, further right has higher EA, but noble gases (Kr) have very low compared to rest of elements in same period nearby.
c) K < Na < Cs, all in same group, higher has higher EA

31)
a) ammonium nitrate
b) lead(IV) acetate or plumbic acetate
c) disulfur dichloride
d) barium nitrate
e) tetraphosphorus decaoxide
f) manganese(III) oxide

32)
a) $SrCl_2$
b) $PbSO_3$
c) $Cr(C_2H_3O_2)_3$
d) H_2S
e) IF_7

33) Classifying reactions help to predict the products of a particular reaction, as all reactions in a particular 'class' follow similar patterns in the products they form.

34)
a) $Zn_{(s)} + 2AgNO_{3(aq)} \rightarrow 2Ag_{(s)} + Zn(NO_3)_{2(aq)}$; single displacement
b) $Fe_{(s)} + S_{(s)} \rightarrow FeS_{(s)}$; synthesis
c) $2KClO_{3(s)} \rightarrow 2KCl_{(s)} + 3O_{2(g)}$; decomposition
d) There is an error in the formula of sodium carbonate in the book!
$Na_2CO_{3(aq)} + MgSO_{4(aq)} \rightarrow MgCO_{3(s)} + Na_2SO_{4(aq)}$; double displacement
e) $C_2H_6O_{(l)} + 3O_{2(g)} \rightarrow 2CO_{2(g)} + 3H_2O_{(g)}$; complete combustion

35)
a) $Mg_{(s)} + 2HCl_{(aq)} \rightarrow H_{2(g)} + MgCl_{2(aq)}$; single displacement
b) $2HgO_{(s)} \rightarrow 2Hg_{(l)} + O_{2(g)}$; decomposition
c) $4Al_{(s)} + 3O_{2(g)} \rightarrow 2Al_2O_{3(s)}$; synthesis
d) $C_6H_{12}O_{6(s)} + 6O_{2(g)} \rightarrow 6CO_{2(g)} + 6H_2O_{(l)}$; complete combustion
e) $BaCl_{2(aq)} + Na_2SO_{4(aq)} \rightarrow 2NaCl_{(aq)} + BaSO_{4(s)}$; double displacement

Inquiry
P156
38) Raja reported his 'mass of calcium sulfate' data with the wrong number of decimal places. Trials 1 and 2 should only have 1 decimal place, trial 3 should have 2 decimal places.

41)
a) Yes, a reaction has taken place as evidence of new substances is present; specifically a new metal and a new colour in the solution. It appears that metals have swapped places from being metallic to ionic, which is a single displacement reaction.
b) Since the reaction is spontaneous, then the metal in the elemental state is more reactive than

the metal in the ionic state; therefore, X is more reactive than Z.
c) X must be higher in the reactivity series than Z. Also, X must form ionic compounds that typically have colour. From past experience in grade 9 and grade 10 science, one such element you have seen is copper, it forms blue solutions (other possibilities you may have seen are cobalt and iron).
Therefore, X can be copper, Z must be lower than copper in the reactivity series, such as silver:
$Cu_{(s)} + Ag_2SO_{4(aq)} \rightarrow CuSO_{4(aq)} + 2Ag_{(s)}$

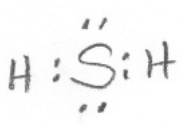
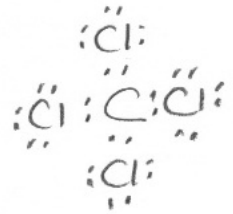
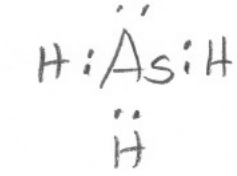
Communication
P156

42)
a) 21.5 g; b) 58 cm^3; c) 19.3 kg/dm^3; d) 17.5 g; e) 298 ^0C

44)

Atom or ion	protons	neutrons	electrons
$^{14}N^{3-}$	7	7	10
$^{32}S^{2-}$	16	16	18
^{4}He	2	2	2
$^{7}Li^{+}$	3	4	2
^{36}S	16	20	16

49)

a) $CrBr_2$ Can't be done, Cr is not a main group (1,2,13-18) element!!	b) H_2S 
c) CCl_4 	d) AsH_3 
e) CS_2